SOLUTIONS FOR THE REFINING AND CHEMICALS INDUSTRIES

As a global solutions provider for advanced water and wastewater treatment, Gradiant's solutions expertise in water helps brand owners and manufacturers maximize production and achieve sustainability goals.

REFINING AND CHEMICALS

Refineries and chemical producers fuel the supply of the world's most critical raw materials. They require significant quantities of water throughout their operations for steam production, cooling, process make-up, utility water, and product rinsing. Complex waste streams are generated that require bespoke, cost-optimized solutions.

Wastewater streams consist of high concentrations of oil and grease, COD, as well as organic and inorganic contaminants that would harm the environment. Some, such as surfactants and petroleum hydrocarbons, reduce performance efficiency and must be removed as part of pretreatment.

Enter Gradiant. With a proven track record of technical expertise and innovation, we help customers better manage their water and process resources. Our patented technologies efficiently and effectively treat water and wastewater across the entire complex, increase process efficiency and reliability, and treat variable waste streams to help clients minimize their water and carbon footprints and meet sustainability goals.



WE HAVE PROVEN KNOW-HOW TO:

Yield the High Value End-Products the Industry Demands Efficiently Process all Grades of Crude Oil Customize solutions for Complex Process Streams Ensure Environmental Discharge Compliance Design and Operate Facilities with Access to the Latest AI Technologies

aradiant

DIFFERENT BY DESIGN



Unlike traditional water companies, Gradiant offers more than just technologies – we provide solutions that make a difference in your operations.

Our relentless focus on value ensures that whatever solution we develop will address your specific challenges and will do so at an optimized total cost of operation.

This approach not only considers capital costs but also the operational costs that endure over time.

We have the technical know-how, project delivery expertise, and AI and machine learning to ensure your facility is designed and operated at the best across its lifetime.

OUR SOLUTIONS ENABLE UNPRECEDENTED PERFORMANCE

compared to conventional technologies:

Increased
Process Yield

Lower Capital and Operational Costs

Opportunity to Produce Grades of Crude Previously Not Viable Reduced Water and Carbon Footprints

Flexibility for Integration into Existing Water and Wastewater processes

Higher Operating Efficiencies

GRADIANT'S APPROACH TO WASTEWATER, REUSE, AND MLD AND ZLD SOLUTIONS



(\$/m³)

of Water Recovery

Cost

Gradiant brings customers a cost-effective approach to wastewater challenges with our solutions in MLD and ZLD. What sets us apart is our relentless drive to optimize capital and operating expenses when developing our technical solutions. We strive to not only meet discharge limits, but achieve the lowest total water costs through our innovative process designs.

Industry is increasingly adopting a MLD and ZLD approach to achieve sustainable operations, recover valuable resources, and enjoy lower capital and operating costs at a fraction of a ZLD-only approach.

Gradiant's MLD and ZLD solutions can recover up to 99% of the liquid discharge. Our RO Infinity and Carrier Gas Extraction technologies are used for MLD to reduce brine volumes upstream of ZLD, thereby reducing downstream crystallizers' capital and operating costs. Clients find that combining MLD and ZLD results in significant Total Water Cost savings — of about 60% — compared to ZLD alone. The high system recoveries reduce freshwater withdrawal and wastewater discharge requirements and create opportunities to recover valuable resources.



Adapted from: Journal AWWA Article "Zeroing in on ZLD Technologies for Inland Desalination" by Rick Bond, Srinivas (Vasu) Veerapaneni

Wastewater Treatment & Desalina

CONTACT US

Gradiant serves its clients around the world from our global headquarters in Boston, regional headquarters and Global Innovation Centers in Singapore and Abu Dhabi, and offices located in 18 countries.



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ro Liquid Discharge

Have a question? Contact us at: gradiant.com/contact

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